Cover Letter February 4, 2005

TO: Governor's Office, Bruce Nelson, Rm. 204, State Capitol, P.O. Box 200801, Helena, MT 59620-0801
Environmental Quality Council, Capitol Building, Room 106, P.O Box 201704, Helena, MT 59620
Dept. of Environmental Quality, Metcalf Building, P.O. Box 200901, Helena, MT 59620-0901
Director's Office
Dept. of Natural Resources and Conservation, US F&G Bldg. 1625 11th Ave. Helena, MT 59620
Director's Office
Information Services Section
Water Resources Division, 1424 9th Ave., P.O. Box 201601, Helena, MT 59620-1601
Trust Land Management Division, 1625 11th Avenue, Helena, MT 59601-4600
Montana Department of Fish, Wildlife & Parks, 1420 E. 6th Ave. Helena, MT 59620
Director's Office
Steve Leathe, DFWP Region 4 Office, 4600 Giant Springs Rd. Great Falls, MT 59405
Dave Yerk, DFWP, P.O. Box 733 , Choteau, MT 59422
MT Historical Society, State Historic Preservation Office, P.O. Box 201202 Helena, MT 59620-1202
MT State Library, 1515 E. Sixth Ave., P.O. Box 201800, Helena, MT 59620
Richard Artz, Nilan Water Users Association, Eberl Lane, Augusta, MT 59410
Montana Environmental Information Center, P.O. Box 1184, Helena, MT 59624
Montana Audubon Council, P.O. Box 595, Helena, MT 59624
Lewis & Clark County Commissioners, 316 North Park Ave. Helena, MT 59601
JT Weisner, P.O. 286, Augusta, MT 59410-0286
LF Ranch, P.O. Box 367, Augusta, MT 59410-0367
Mr. Benjamin Pierce, 755 Oneida Street, Denver, CO 80220
Wildlife Federation, P.O. Box 1175, Helena, MT 59624
Trout Unlimited, P.O. Box 7186, Missoula, MT 59807
Northern Plains Resource Council, 2401 Montana Ave. Suite 200, Billings, MT 59626-2336
U.S. Army Corps of Engineers, 301 S. Park Ave. Drawer 10014, Helena, MT 59626-0014
U.S. Fish and Wildlife Service, MT Field Office, 100 N. Park Ave. Suite 320, Helena, MT 59601

Ladies and Gentlemen:

The enclosed Environmental Assessment (EA) has been prepared for the Smith Canal Rehabilitation and Culvert Replacement Project and is submitted for your consideration. Please feel free to contact me at (406) 444-6622 (e-mail jdomino@state.mt.us) should you have any questions or comments. Comments will be accepted until 5:00 p.m., Monday, February 28th, 2005. Address all comments to: James P. Domino DNRC Water Resources Division, State Water Projects Bureau, 1424 9th Ave. P.O. Box 201601, Helena, MT 59620-1601.

Copies of the EA are available upon request. The EA can also be viewed on the DNRC website at www.dnrc.state.mt.us. Thank you.

Sincerely,

James P. Domino
Environmental Science Specialist
State Water Projects Bureau

DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION
WATER RESOURCES DIVISION, STATE WATER PROJECTS BUREAU
1424 9th Avenue, P.O. Box 201601
Helena, MT 59620-1601

ENVIRONMENTAL ASSESSMENT

SMITH CANAL REHABILITATION AND CULVERT REPLACEMENT PROJECT

I. BACKGROUND

This Environmental Assessment (EA) has been prepared to comply with the Montana Environmental Policy Act (MEPA).

1. General Description

The Nilan Storage Project is located in the northern portion of Lewis and Clark County, Montana, west of the town of Augusta. The project was constructed in the early 1950s. It consists of diversion canals from Smith and Ford Creeks, which divert water to an off-stream storage reservoir. The Smith Creek Diversion Canal diverts water from the north bank of Smith Creek in the northeast quarter of the southwest quarter of the northeast quarter of section 4, township 19 north, range 8 west. It courses northeasterly from there to the end of a ridge in section 26, township 20 north, range 8 west, doubles around the end of that ridge, and drops water into Ford Creek. The Ford Creek diversion canal picks the water up from there and delivers it to the Nilan Reservoir. As constructed, the 4.1-mile-long Smith Creek diversion canal has a capacity of 200 cubic feet per second. The canal prism was designed with a 14-foot-wide bottom and banks, typically, 6 feet high. The diversion works consist of a 1.75-foot-high, 108-feet-long concrete diversion dam/weir and double-gated concrete headworks.

Proposed Modifications

The currently proposed rehabilitation concerns only the Smith Creek Diversion Canal. Due to siltation upstream of the double headgate, only one of the gates is operable. The upper portion of the canal is silted in to a depth of as much as 4 feet. The entire length of the canal has cottonwood and willow trees growing inside the canal prism. The deteriorated original bridges have been replaced with undersized culverts. Much of the water diverted is lost to seepage. The canal is able to convey only a very small portion of the original design capacity in its current condition.

SCOPE OF PROPOSED PROJECT:

The Nilan Water Users Association, along with DNRC's State Water Projects Bureau, plans to:

1. Remove depositional material from the creek bed upstream and downstream of the diversion weir to improve the functionality of the diversion.
2. Remove silt deposits from in front of the headworks to ensure operability of both headgates.
3. Reconstruct the canal to its original design grade and section.
4. Remove trees, willows, and brush from inside the canal prism.
5. Line the worst areas of the canal to reduce seepage.
6. Replace the undersized crossing culverts with appropriately sized culverts or bridges.
7. Reclaim and reseed any areas disturbed by the above activities.
8. Implement weed control measures.

Additional information:

Construction is tentatively planned to begin in early March, 2005, with the project completed within one month.

Equipment to be used would include a backhoe, front-end loader, tracked excavator, chain saws, and hand tools.

The total disturbed area will be less than 5 acres. Approximately 1,000 cubic yards of sediment is expected to be removed along the 1,300-foot reach.

Appendix B contains project site and structure photographs, tentative construction schedule, easement deed and location maps.

2. Location of Project

The proposed project is located in Lewis and Clark County, west of Augusta, Montana. The Smith Creek Diversion Canal diverts water from the north bank of Smith Creek in the northeast quarter of the southwest quarter of the northeast quarter of section 4, township 19 north, range 8 west. It courses northeasterly from there to the end of a ridge in section 26, township 20 north, range 8 west, doubles around the end of that ridge, and drops water into Ford Creek. The LF Ranch owns the surrounding land. The DNRC has a permanent easement for the canal, including access for maintenance and repair purposes.

3. Purpose and Need for the Project

The Smith Canal is one of the main supply canals for Nilan Reservoir. The canal currently has a greatly diminished capacity due to brush, debris and sediment accumulation. The proposed rehabilitation would return the canal to its design capacity of 200 cfs and enhance the supply of water to the Nilan Reservoir.

II. ENVIRONMENTAL REVIEW

Whenever possible, effects to the environment will be avoided. Where effects cannot be avoided, they will be minimized to the extent possible.

1. Environmental Impact Checklist

An environmental checklist has been included as **Appendix A.**

2. Environmental Consequences

Air

During construction, equipment emissions will contain some pollutants. Because of the rural location of the site, these emissions should not impact adjacent property owners.

Because of the timing and anticipated high water content of local soils during construction, dust should not be significant and that dust control will not be necessary.

Water

The canal will be dry during construction. The work on the diversion structure in Smith Creek would be accomplished when the creek is dry, before the main spring runoff. A temporary and slight degradation of water quality is likely to occur due to sediments. This should happen only as water begins flowing in Smith Creek. Any downstream water quality impacts would be minor and temporary. The short project duration, and the regrading of the stream bank to its original contours to reduce erosion would minimize

potential impacts. Fuel storage and equipment refueling will take place away from both the stream channel and the canal prism. The amount of water diverted into the canal would potentially be increased up to the original design capacity of the canal (200 cfs). Downstream flows in Smith Creek may be reduced periodically due to the increased canal capacity. Any potential impacts would be temporary, short-term and non-significant.

Vegetation

The disturbed area of the construction site will be no greater than 5 acres, with the existing vegetation consisting primarily of cottonwood, willow, aspen, grasses and small shrubs and brush. All disturbed areas would be re-vegetated by re-seeding. A weed control program will be implemented until vegetation is re-established.

Fish and Wildlife

No impacts are anticipated to any threatened, endangered or species of special concern.

Wildlife: No impacts to wildlife are anticipated. A file search was conducted by the MT Natural Heritage Program. Grizzly bears have been sighted in the project area in the past; however the timing and nature of the project should prevent any conflicts or impacts. The area is also listed as lynx habitat and Nilan Reservoir is listed as potential swan nesting habitat. No impacts to these or any other wildlife species of species of special concern are anticipated.

Fisheries: No impacts to fisheries resources are anticipated. Smith Creek is normally dry and not flowing during the proposed work timeframe. Downstream sedimentation from the construction would be minimal and occur only for a short time period before the spring runoff. The effect of increased flows in the canal should not significantly affect downstream fisheries resources.

Noise

Noise levels will increase temporarily during the construction period. Because of the rural location of the site, construction noise would not impact the adjacent landowners. Impacts from construction noise to wildlife are expected to be negligible and will end upon completion of the project.

Land Use

There will be no change in land use.

Taxes

The tax base will not be affected.

Recreation

Will not be affected. The project location is entirely on private land. Recreational access is at the discretion of the landowner.

Cultural Resources

No archeological sites are known to exist in the proposed project area and no impacts are anticipated. The Montana Historical Society has been notified of the project. The Nilan Water Project has been documented (Smithsonian Site No. 24LC1818) and was recommended as ineligible for inclusion in the National Register.

III. ALTERNATIVES

1. No Action Alternative

The canal would continue to function at a greatly diminished capacity, negatively impacting the ability to divert water to Nilan Reservoir. This could potentially negatively effect the fulfillment of water rights associated with the Nilan Project.

IV. CONSULTATION AND COORDINATION

1. Agencies Consulted

Federal and State Government agencies and private organizations were contacted regarding the rehabilitation construction proposal:

Agency Name	Type of Responsibility
U.S. Army Corps of Engineers	regulatory/technical
Montana Dept. of Fish, Wildlife & Parks	regulatory/technical
Montana Dept. of Environmental Quality	regulatory/technical
Montana State Historic Preservation Office	advisory
Montana Natural Heritage Program	advisory
U.S. Fish and Wildlife Service	regulatory

2. Permits Required

The following permits will be needed for the project:

Permit	Issuing Agency	Statue
124-Permit	DFWP	Pending

3. Public Involvement

Public comments will be solicited through the distribution of the draft EA to those listed on the cover page, and publication on the DNRC website.

V. CONCLUSION

Based on the criteria evaluated in this EA, no significant impacts, either individually or cumulative will result from the project.

PART II. ENVIRONMENTAL CHECKLIST REVIEW

1. PHYSICAL ENVIRONMENT

	IMPACTS					
	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
1. LAND RESOURCES						
Will the proposed action result in:						
a. Soil instability or changes in geologic substructure?		X				
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil which would reduce productivity or fertility?		X				
c. Destruction, covering or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?			X		See 1d comment	1d.
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?		X				
f. Other: _____						

Note: 1d. The construction would cause a temporary, non-significant and minor increase in sediments within the stream channel, primarily during the spring runoff. The effect would be mitigated by reshaping the stream bank to its original contour and reseeding disturbed areas upon project completion.

PHYSICAL ENVIRONMENT (Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
2. AIR						
Will the proposed action result in:						
a. Emission of air pollutants or deterioration of ambient air quality?			X		See 2a. comment	2a.
b. Creation of objectionable odors?			X		See 2b. comment	2b.
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. Other: _____						

Note: 2a. & b.) During construction, equipment emissions will contain some pollutants and odors. This would end upon project completion.

PHYSICAL ENVIRONMENT (Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
3. WATER						
Will the proposed action result in:						
a. Discharge into surface water or any alteration of surface water quality including but not limited to temperature, dissolved oxygen or turbidity?		X				
b. Changes in drainage patterns or the rate and amount of surface runoff?			X		See 3b. comment	3b.
c. Alteration of the course or magnitude of flood water or other flows?			X		See 3c. comment	3c.
d. Changes in the amount of surface water in any water body or creation of a new water body?			X		See 3d. comment	3d.
e. Exposure of people or property to water related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in the risk of contamination of surface or groundwater?		X				
i. Violation of the Montana Non-Degradation Statute?		X				
j. Effects on any existing water right or reservation?		X				
k. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
l. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
m. Other: _____						

Note: 3b, c and d.) The amount of water diverted into the canal would potentially be increased, up to the design capacity (200 cfs). Downstream flows in Smith Creek may be reduced periodically due to the increased canal capacity. Any potential impacts would be temporary, short-term and non-significant.

PHYSICAL ENVIRONMENT (Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
4. VEGETATION						
Will the proposed action result in:						
a. Changes in the diversity, productivity or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X		See 4a. comment	4a.
b. Alteration of a plant community?		X				
c. Adverse effects on any unique, rare, threatened, or endangered plant species?		X				4c.
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. Other: _____						

Note:
4a.) Less than five acres of vegetation would be disturbed, consisting mostly of sage, grasses, aspens, cottonwoods and willows. All disturbed areas would be reclaimed and reseeded upon project completion.

4c.) A file search was conducted by the Montana Natural Heritage Program. No impacts are anticipated to any threatened, endangered or plant species of special concern.

PHYSICAL ENVIRONMENT (Continued)

	IMPACTS					
	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
5. FISH/WILDLIFE						
Will the proposed action result in:						
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?		X				5b.
c. Changes in the diversity or abundance of nongame species?		X				5c.
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				5f.
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest or other human activity)?		X				
h. Other: _____						

Note:
5b,c and f.) A file search was conducted by the MT Natural Heritage Program. No impacts are anticipated to any threatened, endangered, or wildlife or fish species of special concern. Grizzly bears have been sighted in the project area in the past; however the timing and nature of the project should prevent any conflicts or impacts. The area is also listed a lynx habitat and Nilan Reservoir is listed as potential swan nesting habitat. No impacts to these or any other wildlife or fisheries species of species of special concern are anticipated.

2. HUMAN ENVIRONMENT

	IMPACTS					
	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
6. NOISE/ELECTRICAL EFFECTS						
Will the proposed action result in:						
a. Increases in existing noise levels?			X		See 6a. comment	6a.
b. Exposure of people to severe or nuisance noise levels?			X		See 6b. comment	6b.
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other: _____						

Note: 6a.) Noise levels will increase temporarily during the construction period. However, this is a very rural area. The impact will end upon completion of the project.
6b.) (Same as item a. above)

HUMAN ENVIRONMENT
(Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
7. LAND USE						
Will the proposed action result in:						
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?		X				
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?		X				
d. Adverse effects on or relocation of residences?		X				
e. Increase regulatory restrictions on private property rights?		X				
f. Other: _____						

Note: .

HUMAN ENVIRONMENT
(Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
8. RISK/HEALTH HAZARDS						
Will the proposed action result in:						
a. Risk of an explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. Other: _____						

Note:

HUMAN ENVIRONMENT
(Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
9. COMMUNITY IMPACTS						
Will the proposed action result in:						
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other: _____						

Note:

HUMAN ENVIRONMENT
(Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
10. PUBLIC SERVICES/ TAXES/UTILITIES						
Will the proposed action:						
a. Have an effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify: _____ _____ _____ ___		X				
b. Have an effect upon the local or state tax base and revenues?		X				
c. Result in a need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. Result in increased use of any energy source?		X				
e. Other: _____						

Note:

HUMAN ENVIRONMENT
(Continued)

	IMPACTS					
	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
11. AESTHETICS/ RECREATION						
Will the proposed action result in:						
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational opportunities and settings?		X				
d. Other: _____						

Note:

HUMAN ENVIRONMENT
(Continued)

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
12. CULTURAL/ HISTORICAL RESOURCES Will the proposed action result in:						
a. Destruction or alteration of any site, structure or object of prehistoric, historic, or paleontological importance?	X					12a.
b. Physical change that would affect unique cultural values?	X					12b.
c. Effects on existing religious or sacred uses of a site or area?	X					12c.
d. Other: _____						

Note: 12a, b, and c.) An assessment of cultural resources will be completed by the State Historic Preservation Office. The SHPO findings and recommendations will be incorporated in the final draft of the EA and Notice of Decision. The Nilan Project was recommended as ineligible for inclusion to the National Register in an assessment completed by the DNRC Archeologist. It is not anticipated that any cultural or historic resources would be impacted by the project.

3. SIGNIFICANCE CRITERIA

IMPACTS

	UNKNOWN*	NO IMPACTS	MINOR IMPACTS:*	POTENTIALLY SIGNIFICANT IMPACTS:*	CAN IMPACTS BE MITIGATED *	COMMENT INDEX
13. SUMMARY EVALUATION OF SIGNIFICANCE						
Will the proposed action, considered as a whole:						
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources which create a significant effect when considered together or in total.)		X				
b. Involve potential risks or adverse effects which are uncertain but extremely hazardous if they were to occur?		X				
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?		X				
f. Other: _____						

Note:

Appendix B

Tentative Project Schedule

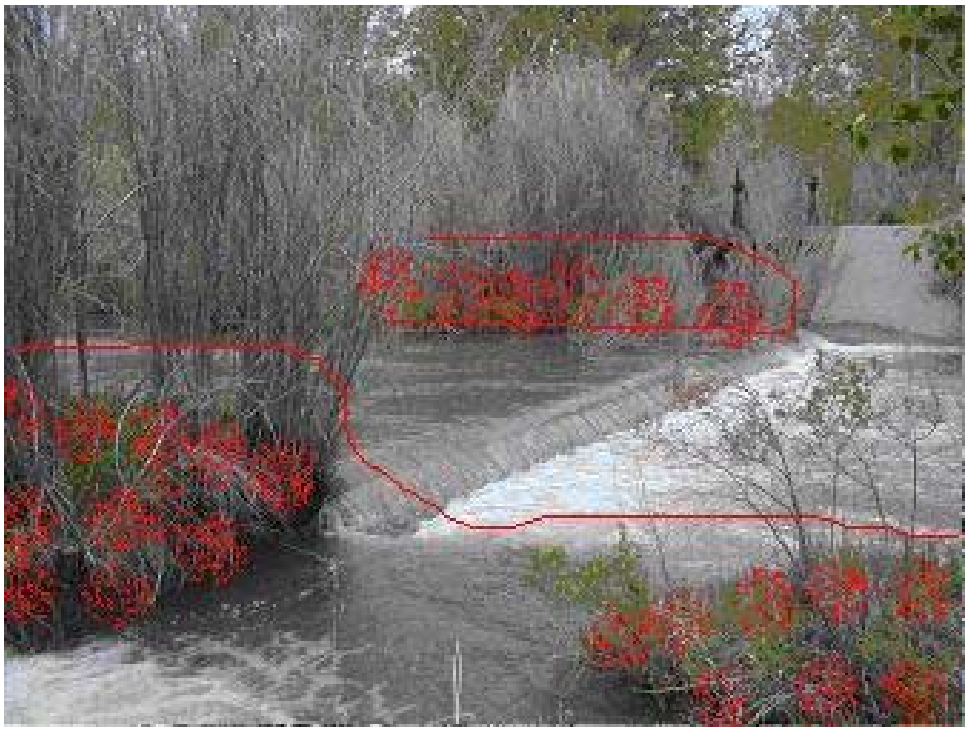
The Nilan Water Users Association and the DNRC, State Water Projects Bureau, would perform the necessary work per the following general schedule:

TimeFrame	Activity
Early Winter 2005	EA and secure permits
Late Winter 2005	Meet on site with LF Ranch owners
Early Spring 2005	Stake easement boundary
Spring 2005 (before runoff)	Clean area around weir and headworks
Spring 2005	Remove vegetation and silt from canal
Spring 2005 (during runoff)	Perform water measurements in creek
Spring 2005 (before opening headgates)	Apply Canal Seal
Spring/Summer 2005	Measure seepage water loss in canal
Concurrent with rehabilitation	Replace culverts

Site and Facility Photographs:

NILAN PROJECT
Smith Creek Diversion Cleaning
May 2004 Photos Showing Areas to be Cleared Out

Red areas show brush and trees to be cleared and sediment removal areas. The blue area in Photo 5 shows water locations.

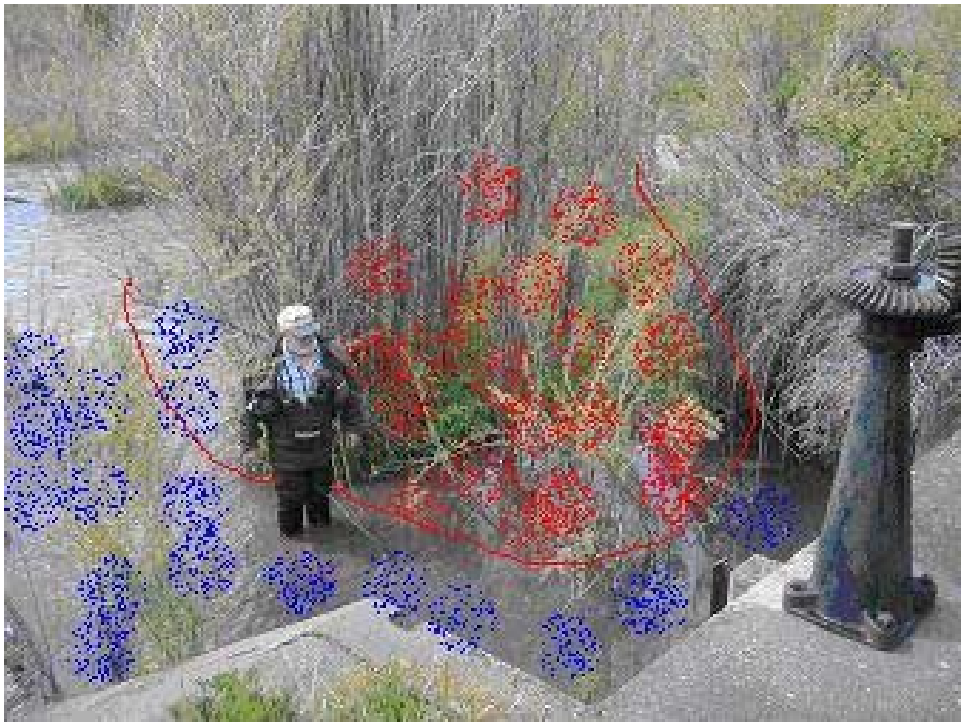


May Photo 1: Diversion Weir Showing Areas of Willows and Sediment to be Removed

May Photo 2: More Vegetation and Sediment at Weir

May Photo 3: More of Same

May Photo 4: Vegetation and Sedimentation to be Removed at Headgate



May Photo 5: Flow Depth at Entrance to Headgate Should be Over Waist-deep

May Photo 6: Overgrown Canal Flowing Approximately 6 cfs. Design is 200 cfs

May Photo 7: Trees and Brush Choking Canal Just Downstream of Headgate

May Photo 8: Canal Starts to Open Up 1,000 feet Downstream, but Still Needs Cleaning

CANAL CROSSINGS The original easement for the Smith Creek diversion canal requires that the State build and maintain five 5-ton bridges over the canal. Per the request of a previous landowner, two of those bridges were constructed over Ford Creek at locations beneficial to the landowner. Three timber bridges were constructed over the canal. Those timber bridges have long since deteriorated to the point that they have been replaced with CMP culverts. Those culverts are grossly undersized for the capacity of the canal and will be replaced as part of the proposed rehabilitation. Current plans are to replace each undersized culvert with two 60-inch by 46-inch CMP arch pipes.

Figure 1: Existing 42-inch CMP culvert to be replaced. Note dilapidated timber bridge in background.

Figure 2: Typical 46" by 60" CMP arch culvert. Will be used to replace existing culverts.